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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,122	07/02/2003	Meng H. Lean	D/A3107 XERZ 2 00594	3936

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EXAMINER

HAGEMAN, MARK

ART UNIT PAPER NUMBER

3653

DATE MAILED: 08/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/612,122	LEAN ET AL.	
	Examiner	Art Unit	
	Jonathan R. Miller	3653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-3,9-11,19-23 and 25-36 is/are pending in the application.
- 4a) Of the above claim(s) 28-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,9-11, 19-23, 25-27, 33-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Newly submitted claims 28-32 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the apparatus of claims 28-32 operates in a different manner, utilizing a unipolar voltage pattern, than the embodiments originally presented.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 28-32 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1- 3, 9-11, 19 – 20, 23, 25-27 and 33-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Rostoker. The reference discloses a first wall and a traveling wave grid extending along said first wall (col. 7, lines 54+); a second wall having a passage extending therethrough; a gate operatively associated with said passage, said gate includes a first electrode proximate said first and a second electrode proximate said second end; and, a controller adapted to output a multi-phase electrical signal and in electrical communication with said traveling wave

Art Unit: 3653

grid and said gate, wherein the controller provides a first voltage to said first electrode and a second opposite voltage to said second electrode (col. 9, lines 4+).

4. With regards to claim 2, the reference further discloses said passage is comprised of a plurality of apertures extending through said second wall (Fig. 6b).

5. With regards to claim 3, the reference inherently discloses said plurality of apertures are substantially cylindrical and have a diameter of from about 10 micrometers to about 250 micrometers. The apparatus is specifically designed for use on a microscopic scale and the embodiment shown in Figs. 6a and 6b is designed to separate microscopic particles through the apertures (col. 9, lines 4+).

6. With regards to claim 9, the reference further discloses said traveling wave grid is a first traveling wave grid and said system further comprises a second traveling wave grid extending along said second wall (Fig 7a; col. 10, lines 12+).

7. With regards to claim 10, the reference further discloses said first wall is substantially cylindrical (Fig. 1a).

8. With regards to claim 11, the reference further discloses a housing having a first wall at least partially defining a first transport channel, a second wall at least partially defining a second transport channel, and a gating passage extending in fluid communication between said first and said second transport channels; a traveling wave grid disposed along said first wall; a gate operatively associated with said gating passage, said gate including a first electrode proximate the first transport channel and a second electrode proximate the second transport channel; and, a voltage source adapted to output a multi-phase voltage signal and in electrical communication with said traveling wave grid and said first and second electrodes of said gate (col. 9, lines 4+).

9. With regards to claim 19, the reference further discloses said traveling wave grid includes four conductor groups, each having a plurality of conductors, said conductor groups disposed in an inter-digitized pattern (col. 7, lines 54+).

10. With regards to claim 20, the reference further discloses said voltage source outputs a four phase voltage signal, and each of said four phases is applied to a different one of said conductor groups (col. 9, lines 4+; Fig. 6a).

11. With regards to claim 23, the reference further discloses providing a first wall at least partially forming a first chamber, a second wall at least partially forming a second chamber, a passage wall at least partially defining a passage extending in fluid communication between said first and second chambers, a traveling wave grid disposed along said first wall (col. 7, lines 54+), a gate operatively associated with said passage, said gate including first and second spaced apart electrodes disposed along said passage, and a controller adapted to selectively output a multi-phase electrical signal and in electrical communication with said traveling wave grid and said gate; introducing a quantity of separable particles into said first chamber; applying a multi-phase electrical signal from said controller across at least a portion of said traveling wave grid inducing flow of said quantity of separable particles along said first chamber; and, selectively gating a portion of said quantity of separable particles flowing along said first chamber into said second chamber by said controller outputting an electrical signal having first and second phases, and applying said first phase to said first electrode of said gate and applying said second phase to said second electrode of said gate (col. 9, lines 4+; Fig. 6a).

12. With regards to claim 25, the reference further discloses said step of providing includes providing a continuous particle supply apparatus in fluid communication with said first chamber,

Art Unit: 3653

and said step of introducing a quantity of separable particles includes introducing a continuous quantity of separable particles from said supply apparatus (col. 9, lines 4+; Figs. 6a and 6c).

13. With regards to claim 26, the reference further discloses the first voltage is a positive voltage and the second voltage is a negative voltage.

14. With regards to claim 27, the reference further discloses the first and second voltages are 180 degrees out of phase.

15. With regards to claim 33, the reference further discloses a housing having a first wall at least partially defining a first transport channel, a second wall at least partially defining a second transport channel, and a gating passage extending in fluid communication between said first and said second transport channels, a first traveling wave grid disposed along said first wall (col. 7, lines 54+); a gate operatively associated with said gating passage', a continuous particle supply apparatus in fluid communication with said first transport channel, said supply apparatus including a supply housing at least partially defining a supply chamber, and a second traveling wave grid disposed within said supply chamber; and a voltage source adapted to output a multi-phase voltage signal and in electrical communication with said first and said second traveling wave grid and said gate (col. 9, lines 4+).

16. With regards to claim 34, the reference further discloses a support wall supported within said supply chamber and said second traveling wave grid extends along at least a portion of said support wall (col. 9, lines 4+).

17. With regards to claim 35, the reference further discloses said support wall is generally cylindrical (Fig. 1a).

18. With regards to claim 36, the reference further discloses a first gating passage, and said supply apparatus is in fluid communication with said first transport channel through a second gating passage extending between said supply chamber and said first transport channel (Fig 7a; col. 10, lines 12+).

***Claim Rejections - 35 USC § 103***

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker. The reference fails to explicitly disclose said plurality of apertures are substantially cylindrical and have a diameter of from about 10 micrometers to about 250 micrometers. At the time of the invention, it would have been obvious to one of ordinary skill in the art to utilize apertures having a diameter of from about 10 micrometers to about 250 micrometers to achieve a meaningful separation of particles. The apparatus is specifically designed for use on a microscopic scale and the embodiment shown in Fig. 6a is designed to separate microscopic particles through the apertures.

21. With regards to claim 9, the reference fails to explicitly disclose said traveling wave grid is a first traveling wave grid and said system further comprises a second traveling wave grid extending along said second wall. At the time of the invention, it would have been obvious to one of ordinary skill in the art to utilize a plurality of traveling wave grids to provide more control over the particles to effect a more precise separation (col. 10, lines 12+).

Art Unit: 3653

22. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker in view of Docoslis et al.

23. With regards to claim 21, Rostoker fails to disclose said traveling wave grid is a first traveling wave grid and said gating passage is a first gating passage, said housing further includes a third wall at least partially defining a third transport channel and a second gating passage extending in fluid communication between said second and said third transport channels, and said system further includes a second traveling wave grid extending along said second wall. Docoslis et al. discloses said traveling wave grid is a first traveling wave grid and said gating passage is a first gating passage, said housing further includes a third wall at least partially defining a third transport channel and a second gating passage extending in fluid communication between said second and said third transport channels, and said system further includes a second traveling wave grid extending along said second wall (col. 11, lines 17+). At the time of the invention, it would have been obvious to one of ordinary skill in the art to utilize more than one wave grid to create a multistage configuration of filter plates to achieve superior separation results.

24. With regards to claim 22, Rostoker fails to disclose said gate is a first gate, and said system further includes a second gate operatively associated with said second gating passage. Docoslis et al. discloses said gate is a first gate, and said system further includes a second gate operatively associated with said second gating passage (col. 11, lines 17+). At the time of the invention, it would have been obvious to one of ordinary skill in the art to utilize more than one wave grid to create a multistage configuration of filter plates to achieve superior separation results.



25. Rostoker and Docoslis et al. are analogous art as they are from the same field of endeavor: electrostatic separators.

***Response to Arguments***

26. Applicant's arguments filed 4/25/06 have been fully considered but they are not persuasive. Applicant contends that the Rostoker reference fails to disclose opposite voltages applied to conductors at opposing ends of the apertures. Examiner disagrees. The reference discloses that opposite voltages are used to move particles through traveling waves, and further discloses a number of embodiments. Applicant uses the description of Fig. 6b, where voltages are applied to some (or one) of the holes, while an opposite (or no) charge is applied to the other holes, to state that opposite voltages are not applied to the electrodes of Fig. 6a. Examiner disagrees with this analysis. The reference teaches the use of traveling waves to move particles. With regards to Fig. 6a, the reference states that a "particle near the aperture 630 can be accelerated (caused to move) through the aperture by application of appropriate accelerating potentials to the two conductive layers 610 and 612". The teaching of appropriate accelerating potentials – cyclical out of phase voltages applied to the electrodes – is set forth in the reference (col. 4, lines 50+).

***Conclusion***

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan R. Miller whose telephone number is (571) 272-6940. The examiner can normally be reached on M-F: 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Mackey can be reached on (571) 272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jrm



**PATRICK MACKEY  
PRIMARY EXAMINER**

Application/Control Number: 10/612,122

Page 10

Art Unit: 3653